IMPACT OF THE FOOD STAMP PROGRAM ON THREE LOCAL ECONOMIES

An Input-Output Analysis

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ABSTRACT

The study uses standard input-output analysis to assess the effect of the Food Stamp Program on the economies of three rural counties. Economic sectors in the counties are delineated and the degree of their interdependence is determined. The food retailing, local government, and import sectors are given special attention. A change in the economy -- that is, the Food Stamp Program -- is then measured for its effect on increased output and employment.

For every dollar of Food Stamp Program expenditure, output in Haywood County, Tenn., increased by $1.20 to $1.26. Total county program expenditures for 1970 -- at over $1.2 million -- were estimated to have generated an additional $1.5 million of local economic activity. This increase had the potential of creating 60 new man-years of employment. Similar analysis was done for Appanoose County, Iowa, and Chaves County, N. Mex., and revealed corresponding output increases of $1.37 to $1.42 and $1.65 to $1.68, respectively.

Key Words: Food Stamp Program; Input-output analysis; Economic development; Economic impact; Multipliers; Employment.

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PREFACE

To assess the performance of the several food assistance programs which it administers at the national level, the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture has authorized a number of studies designed to provide information on which to base evaluations of the programs.

Results of this study, developed jointly by the FNS and the Economic Research Service (ERS), can be used to identify and measure the impact of the Food Stamp Program on a local economy. Such information can be of value to national and local administrators of the Food Stamp Program in day-to-day operations as well as in efforts to initiate or expand the program in a particular locality.

Three counties that represent a diversity of economic, social, and geographic conditions were selected for the study. Each county participated in the Food Stamp Program.

Information for the analysis was obtained primarily from personal contact in the specific localities. When necessary, secondary data sources were used to provide base values for making current estimates. The problem of obtaining verifiable current data pertinent to each county was formidable and procedures in data collection were necessarily flexible. The nature and amount of data that could be obtained in every instance placed constraints upon the size and detail of the models used in the analysis.

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The Food Stamp Program, in addition to helping low-income families improve their diets, provides significant benefits to local economies. In three rural counties in 1970, an estimated $1.20 to $1.68 worth of additional business was generated as a result of every dollar of Food Stamp Program expenditure. These expenditures are the value of bonus stamps issued (the difference between what a household pays for the stamps and the actual monetary value of the stamps) and local government expenses for program administration. Because of the increased economic activity in the three counties, 11 to 60 new jobs were potentially available.

Bonus stamp issuances resulted in increased output in the food retailing sectors of the three counties -- Haywood County, Tenn., Appanoose County, Iowa, and Chaves County, N. Mex. In each county, the wholesaling sector had to increase its output to provide additional inputs to the food retailing sector. Suppliers to the wholesaling sector, in turn, had to increase their output. Thus, in addition to generating a direct increase in the food retailing sector's output, the issuance of bonus stamps indirectly generated increases in the output of other sectors.

Calculations of increased economic activity within the local areas take into account the amount of local income spent outside the economy.

In Haywood County, Tenn., the 1970 value of bonus stamp issuances was nearly $1.2 million, and local government expenses for program administration were nearly $16,000. The impact of these expenditures on the local economy was an estimated $1.5 million. This increased economic activity was capable of creating approximately 60 new jobs. Although the value of total food stamps issued represented only 6 percent of total household income, food bought with stamps represented a third of all food sales in the county and nearly 10 percent of all food and nonfood retail sales.

In Appanoose County, Iowa, the 1970 value of bonus stamp issuances was about $184,000, with local operating expenditures approximating $15,000. Resulting output increases in food retailing and other sectors is estimated to be $250,000, with this increase representing approximately 11 new jobs. Of the three counties studied, Appanoose County had the smallest Food Stamp Program -- the value of total food stamp issuances represented 1 percent of total household income. Food bought with stamps approximated 5 percent of total food sales.

Bonus stamp issuances in Chaves County, N. Mex., were valued at approximately $870,500 in 1970. This amount, together with local program expenditures, generated approximately $1.5 million of additional economic activity in the local economy. Such increased activity had the potential for creating 59 new jobs.

IMPACT OF THE FOOD STAMP PROGRAM ON THREE LOCAL ECONOMIES: AN INPUT-OUTPUT ANALYSIS

by

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INTRODUCTION

In recent years, the Food Stamp Program has made significant contributions to the economic and social well-being of millions of people. This program, which is administered at the national level by the U.S. Department of Agriculture's Food and Nutrition Service, enables low-income families to increase their expenditures for food and to upgrade the quality of their diet.

Under the program, eligible households can exchange a specified amount of money for food stamp coupons of a higher monetary value. The difference between the amount the household pays for the stamps issued and the monetary value of the allotment represents the bonus stamps. The value of bonus stamps represents the Federal contribution to the household's increased purchasing power. The household can then use the stamps to purchase food (certain imported foods are excluded) at retail outlets at prevailing prices.

Participation is limited to households whose income is determined to be a substantial limiting factor in the attainment of an adequate diet. Each State is responsible for the certification of eligible households and the issuance of food stamps to these households.

In fiscal 1970, 6.5 million persons benefited from the program, double the number in the previous fiscal year. Total food stamps issued throughout the country were $1.1 billion, of which over $500 million was bonus stamps. Monthly benefits per person increased from $6.62 in 1969 to $10.55 in 1970.

Such a large and expanding program, in addition to benefiting food stamp recipients, is also likely to have substantial beneficial effects on a local community's economy. To assess the benefits to the community, planners and administrators need information on whether and to what extent local commerce or production has increased as a result of operation and administration of the Food Stamp Program, how much new income has been generated, and whether new jobs have been created. To provide estimates of these impacts, not only the direct or initial effects, but also all secondary effects of the program need to be measured. Direct effects are those immediately related to the Food Stamp Program. For example, increased retail food sales and increased local government expenditures for program administration are direct effects. Secondary effects are changes resulting in other economic sectors as they adjust to the new economic situation. Such changes generally will affect to some degree all businesses in the local economy as well as commerce outside the local area.

The objective of this study is to determine the direct and indirect effects of the Food Stamp Program on three local economies. To measure these effects, input-output analysis is used to describe the interdependence of economic activities within the local areas. Economic sectors within the local economy are delineated and when their structural interdependence has been determined, their response to an induced change in the economy can be measured.

The input-output model is based on two fundamental assumptions. The first and most important assumption is that the direct input-output coefficients are fixed. This assumption implies that technology remains constant, no external economies or diseconomies exist, and substitution possibilities due to changes in relative prices are not considered. This fixed-coefficient assumption limits the use of input-output analysis as a long-range forecasting method, but empirical research has indicated that this methodology can yield reasonable approximations within the short term. The second assumption is that there are no aggregation errors in defining sectors. It is assumed that coefficients used to describe a sector will be representative of industries and firms included in that sector.

It is important to recognize that the input-output model describes a situation as it exists at some point in time, rather than predicting what ought to be. The situation as described consists mainly of the degree of interdependence among the economic sectors, as measured by interdependence coefficients. From these coefficients, various predictive instruments can be computed. In this study, we are interested in the output multipliers, which predict or measure changes in output and employment under the different conditions of final demand induced by some change in the economy -- in this case, operation and administration of the Food Stamp Program.

Design of an input-output model poses an immediate question with respect to the number of sectors to be included and hence the degree of detail and complexity of the model. Problems of aggregation must be weighed against the need for detail. In this study, budget and time constraints limited the size of the input-output matrix. The sectors defined in the models were composed of groups of similar firms or industries. The heterogeneous characteristics of these sectors do not permit detailed analysis of specific industries but do allow for general inferences about total output and employment levels. Since primary interest was in the overall impact on the economy rather than specific terms of trade between individual sectors or industries, it was believed that a highly aggregative matrix would not be a crucial detriment to the conclusions of the study. Special attention, however, was given to those sectors with which the Food Stamp Program would have immediate contact -- namely, the food retailing and local government sectors.

The three counties selected for study were (1) Haywood County, a small, rural county in southwestern Tennessee; (2) Appanoose County, a moderately depressed farming area in southern Iowa; and (3) Chaves County, a diversified rural-urban county in eastern New Mexico. The study provides a basis for evaluating the economic consequences of operation and administration of the Food Stamp Program on the economies of the counties. Because these counties are representative of other areas where the program operates, or might be implemented, the study also provides some inferential insight for policy questions relating to the Food Stamp Program in other situations.

GENERAL CHARACTERISTICS OF THE THREE COUNTIES

A brief description of some of the major economic and social characteristics of the three counties will provide a background for the analysis to follow. All three counties have varying degrees of poverty. Chaves County, N. Mex., the most industrialized of the counties, is undergoing a massive readjustment because of severe economic dislocations within recent years. The economic activities in the other two counties are mainly related to agriculture, although the type of agriculture differs considerably between the two areas.

Physical and Geographic Features

Haywood County, in southwestern Tennessee, is small, with an area of 520 square miles characterized by a gently rolling terrain. The climate is temperate, with an annual variation between winter and summer temperatures of 40 degrees. Brownsville, the county seat, is centrally located in the county about 55 miles northeast of Memphis.

Appanoose County is located in the southernmost tier of counties in Iowa at the Missouri border. The topography is hilly, and in some areas the terrain is rough. The soil is generally thin and not very fertile, although in some areas the land can be productive. The climate is wet and is subject to extremes of summer heat and long, cold winters.

Chaves County, a large county in eastern New Mexico, has a land area of over 6,000 square miles. The land is mostly desert, but can be productive with adequate irrigation. Roswell, the major city, is about 200 miles northeast of El Paso, Tex. The climate is dry, with low rainfall -- about 10 inches a year -- and low humidity.

Population

Haywood County, Tenn., had a population of 19,600 persons in 1970. There were 5,500 households in the county. Sixty percent of the population was Negro. Seven thousand persons lived in the city of Brownsville, the county seat, which is the only urban area in the county. The county has experienced a constant decline in population since 1930, when it had nearly 30,000 inhabitants.

Appanoose County, Iowa, had 15,007 inhabitants according to the 1970 census. The average family size was slightly larger than three persons, and there were 5,000 households in the county. Centerville, the county seat, had 6,500 inhabitants; the remaining population lived in rural areas of the county. Over 98 percent of the population was white and the median level of education was around 10 years.

Chaves County, N. Mex., had a 1970 population of 53,000, down from over 60,000 in 1965. Because a large Strategic Air Command base in the county closed in 1967, the economy has undergone major dislocation and readjustment. Approximately 15 percent of the 1970 population was Spanish-American and nearly 5 percent, Negro. There were 14,000 households in the county, and the average family size was 3.8. The majority of people in the county, 41,000, lived in the central city of Roswell.

Income and Employment

Haywood County, Tenn., had a 1970 total personal income of over $30 million. Although over 50 percent of the labor force was employed in the agricultural sector, that sector accounted for less than 40 percent of total personal income. Of the total labor force of 7,200 persons, an average of about 200 persons were unemployed each month. This unemployment rate of less than 3 percent is somewhat understated, because of a significant amount of underemployment in agriculture.

Appanoose County, Iowa, reported a total personal income of $46.8 million in 1970 and an average of over $9,000 per household. Agriculture, the major source of employment, accounted for nearly a third of the labor force and a quarter of total personal income. The total labor force numbered 5,700, and the average monthly employment figure was 5,437. The monthly unemployment rate averaged 5.3 percent in 1970 but reached as high as 8 percent when several major plants laid off labor. Agriculture absorbed some of the unemployed labor, but the farms in the area are becoming increasingly mechanized, reducing the annual agricultural demand for labor.

Chaves County, N. Mex., had total personal income amounting to over $121 million in 1970. The median household income was over $8,000. Agriculture is characterized by large farms and ranches that are extensively mechanized. Agriculture accounted for most of the total personal income but employed only 15 percent of the labor force. Over 80 percent of the labor force was engaged in nonagricultural employment.

THE FOOD STAMP PROGRAM

Before the analysis of the input-output models, the nature and extent of the Food Stamp Program and its operation in the three counties are discussed. In all three counties, the program is administered by the county welfare office, which assumes responsibility for certifying recipients and issuing stamps at monthly intervals. The county welfare office receives financial and administrative assistance from State and Federal offices, but planning, administration, logistics, and operation of the program are conducted at the local level.

Haywood County, Tenn. -- the smallest and poorest of the three counties -- had the largest Food Stamp Program in terms of the value of stamps issued. In 1970, food stamp issuances totaled nearly $1.7 million, of which nearly $1.2 million was bonus stamps.

In 1970, 1,200 households and 6,400 persons participated in the Food Stamp Program on a monthly basis. Approximately 20 percent of the participants were on public assistance and 85 percent were Negro.

Table 1 shows 1970 monthly data on stamp issuance and redemption. Ninety-seven participating food retailers in the county reported redeeming 100 percent of the stamps issued in the county.

Table 1.--Issuance and redemption of food stamps, Haywood County, Tenn., 1970

Month	Issuance		Redemption	Ratio red./iss.
	Bonus	Total		
	Dollars			
Jan.	33,290.50	70,780.00	75,545.00	1.0673
Feb.	103,277.00	141,460.00	121,641.00	0.8598
Mar.	110,634.00	153,676.00	148,431.00	0.9658
Apr.	111,341.50	156,542.00	171,829.00	1.0976
May	105,315.50	152,694.00	150,605.00	0.9863
June	100,968.50	140,492.00	138,504.00	0.9264
July	98,850.50	148,922.00	157,996.00	1.0609
Aug.	98,308.00	147,990.00	163,110.00	1.1021
Sept.	98,062.50	147,386.00	145,516.00	0.9873
Oct.	94,412.00	143,268.00	146,432.00	1.0220
Nov.	92,247.50	139,588.00	133,153.00	0.9539
Dec.	95,176.50	145,322.00	153,408.00	1.0556
Total...	1,141,884.00	1,697,120.00	1,706,170.00	1.0053

In 1970, the county welfare department had seven full-time employees assigned to the Food Stamp Program -- one program supervisor, four certification clerks, one clerk-steno, and one accountant. The local budget for the Food Stamp Program was $16,000, which was about matched by State and Federal contributions. The operational cost of the program was estimated at $35,000. The operation is close to capacity, particularly in terms of the certification clerks. The monthly issuance of stamps is organized so that approximately 150 people are serviced daily over a 2-week issuance period.

Appanoose County, Iowa, had the smallest Food Stamp Program of the three counties studied. In 1970, the program issued $340,000 worth of stamps, of which approximately $184,000 were bonus stamps. Approximately 500 families, representing over 1,500 persons, participated in the program on a monthly basis. Forty percent of the participants were on public assistance. As of March 1971, 38 food retailers were participating in the program.

In 1970, food stamp redemptions in the county averaged 95 percent of the stamps issued, which indicates that some food stamps were being regularly spent outside the county (table 2).

The Food Stamp office staff consists of one full-time worker and three half-time clerks. Although separate accounts for the Food Stamp Program were not available, it is believed that an annual local budget of $15,000 would be a reasonable estimate of operation costs as the program is presently operated.

Chaves County, N. Mex., issued $1.3 million worth of food stamps in 1970, with nearly $870,500 representing bonus stamps. On a monthly basis, stamps were issued to an average of 1,500 households representing over 6,000 persons. Fifty percent of the recipients were also receiving other public assistance.

Table 2.--Issuance and redemption of food stamps, Appanoose County, Iowa, 1970

Month	Issuance		Redemption	Ratio red./iss.
	Bonus	Total		
	Dollars			
Jan.	7,266.50	16,923.00	16,522.00	0.9763
Feb.	15,903.00	26,501.00	23,264.00	0.8778
Mar.	15,444.00	27,964.00	18,068.00	0.6461
Apr.	15,663.50	28,715.00	35,203.00	1.2259
May	15,196.75	28,243.00	29,661.00	1.0502
June	14,881.00	28,343.00	28,445.00	1.0035
July	15,690.25	28,929.00	24,797.00	0.8571
Aug.	15,453.00	28,857.00	30,912.00	1.0712
Sept.	15,684.75	29,154.00	25,120.00	0.8616
Oct.	15,386.75	29,707.00	29,761.00	1.0018
Nov.	17,134.00	31,900.00	32,106.00	1.0064
Dec.	20,280.25	34,870.00	28,442.00	0.8156
Total	183,983.75	340,106.00	322,301.00	0.9476

The 53 participating food retailers reported redemption of 97 percent of the food stamps issued, indicating that there was little net loss of stamps to other trading areas. Table 3 shows monthly issuance and redemption data for 1970.

In 1970, the Chaves County welfare office employed two full-time workers for administration of the Food Stamp Program. Manpower training funds provided by the State employment office were used to employ six temporary workers for certification and clerical help during the year. The total 1970 cost of administration of the program was approximately $30,000 of local, State, and Federal funds.

Table 3.--Issuance and redemption of food stamps, Chaves County, N. Mex., 1970

Month	Issuance		Redemption	Ratio red./iss.
	Bonus	Total		
	Dollars			
Jan.	23,243.00	51,393.00	51,825.00	1.0084
Feb.	59,753.00	89,473.00	79,972.00	0.8938
Mar.	72,951.00	109,806.00	115,348.00	1.0504
Apr.	77,575.00	117,594.00	114,980.00	0.9777
May	75,548.00	116,145.00	116,822.00	1.0058
June	74,504.00	115,421.00	115,101.00	0.9972
July	77,268.00	119,304.00	123,654.00	1.0364
Aug.	75,610.00	116,020.00	119,582.00	1.0307
Sept.	76,835.00	117,517.00	115,591.00	0.9836
Oct.	81,920.00	123,533.00	122,018.00	0.9877
Nov.	83,948.00	127,964.00	124,675.00	0.9742
Dec.	91,375.00	138,292.00	109,000.00	0.7881
Total	870,530.00	1,342,462.00	1,308,568.00	0.9747

INPUT-OUTPUT MODELS

A standard input-output model was designed for each of the three counties to portray and analyze local economic activity. 1/ Data from primary sources were used when available. Such data were obtained from personal interviews and correspondence with county program offices and with local private organizations such as retail food stores. Where necessary, secondary data sources were used as a base to calculate 1970 estimates and, in some instances, to validate estimates made verbally. (See the appendix for a list of these data sources.)

Firms and industries in each county were aggregated into a limited number of sectors. In each model, particular emphasis is given to two sectors. The retail food industry is treated separately as an individual sector, even though most interindustry models aggregate it into the total retailing sector. Explicit focus on this sector was considered necessary because of its direct relationship with the Food Stamp Program.

Particular scrutiny was also given to the local government as an economic activity. As an employer and purchaser, the local government is important to the economy, particularly in depressed or low-income areas. Decisions and policies of the local government will have a substantial effect on other sectors of the economy. An equally important reason for giving explicit attention to the local government is that it administers the Food Stamp Program through its local welfare office.

Of special interest in each case was the role of exports and imports. In each instance, the county was an exporter of agricultural products and in one case, of minerals. Imports were primarily of manufactured goods for consumption. In each county, a substantial proportion of total economic transactions was carried on with agencies outside the local economy.

Intersectoral Flow Tables

In an input-output model, the interindustry flow of goods and services is depicted by tables showing the dispersion of each sector's output among other sectors. These tables provide the base for analysis of the model. A row represents the dollar amount of goods and services sold by the producing sector to each sector named in the head of a column. Column entries represent the input structure of each sector -- that is, the amounts paid to other sectors to purchase necessary inputs.

A brief description of the sectors used in the input-output models for each of the counties follows. Other aspects of the model are then discussed.

1/ For detailed discussion of the theoretical and methodological aspects of standard input-output analysis, the reader may refer to William H. Miernyk, The Elements of Input-Output Analysis (New York: Random House, 1965) or Wassily Leontief, Input-Output Economics (New York: Oxford Univ. Press, 1966).

Haywood County, Tenn.

Seven endogenous and three exogenous sectors were used to portray the economy of Haywood County. Each sector is discussed briefly below. The intersectoral flows are shown in table 4.

Agriculture. This sector makes a significant contribution to the Haywood County economy. In 1970, there were 2,400 farms in the county, producing mainly field crops. Cotton, soybeans, and corn accounted for over 80 percent of total agricultural sales, while livestock and truck crops accounted for the remaining 20 percent.

Over 90 percent of the agricultural products were sold and exported outside the county. Some feed, livestock, and produce were sold locally to merchants and households. The major agricultural cost factor was labor, primarily self-employed farmers and their families. Most input supplies were purchased out of the county, although small irregular purchases were made from local distributors and retailers.

Manufacturing. Fifteen manufacturing firms were located in Haywood County in 1970. When operating at full employment, these firms employed 1,300 persons; however, average monthly employment was around 1,000 persons. During 1960-70, seven new firms were established, each employing over 100 persons. The firms conducted virtually all their sales and purchases outside the county, with the principal in-county contribution being the monthly payroll.

Wholesaling. In 1970, there were 15 wholesalers in the county -- all were located in Brownsville. These wholesalers had low overhead operations and depended on larger suppliers in Memphis. There are no food wholesalers in Haywood County.

Retailing. About 100 small general-merchandise operations characterized the nonfood retailing sector in 1970. Their sales totaled over $16 million. Over 80 percent of their supplies were from sources outside the county.

Food Retailing. In 1970, there were 100 retailers selling food in Haywood County, virtually all of whom participated in the Food Stamp Program. These retail outlets were characteristically small, with 1970 median gross sales of less than $30,000. Only three stores in the county had annual sales greater than $100,000. The sector employed approximately 150 people. The typical store was a one-man operation and in some cases, the stores operated on a part-time basis.

Over 95 percent of the merchandise was purchased from suppliers in Memphis or Jackson. Some seasonal produce was purchased locally and incidental supplies were secured from local merchants.

Services. This sector included all firms not counted elsewhere, including self-employed persons engaged in providing personal services. In addition to such self-employed individuals, 64 firms in Haywood County provided professional or personal services in 1970. Next to agriculture, this sector employed the greatest number of people in the county.

Table 4.--Intersectoral transactions, Haywood County, Tenn., 1970

Sector	Agri-culture	Manu-facture	Whole-saling	Retailing	Food retailing	Services	Local government	Exports	Household	Total
	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.
1. Agriculture	600	300	100	50	100	--	--	16,550	300	18,000
2. Manufacture	50	100	200	50	--	100	--	15,450	50	16,000
3. Wholesaling	1,200	200	500	2,600	300	200	200	500	200	5,900
4. Retailing	800	100	100	200	50	100	200	50	16,500	18,000
5. Food retailing	--	--	50	400	200	100	50	100	4,500	5,400
6. Services	400	700	200	300	100	200	600	300	1,700	4,500
7. Local government	400	500	50	200	50	100	200	900	600	3,000
8. Imports	2,550	8,100	4,200	12,300	4,050	300	100	--	4,250	35,850
9. Households	12,000	6,000	500	2,000	550	3,400	1,650	2,000	2,000	30,100
Total	18,000	16,000	5,900	18,100	5,400	4,500	3,000	35,850	30,100	136,850

Note: -- means less than $50,000.

Local Government. The local government of Haywood County had a total budget of approximately $3 million in 1970. Over 55 percent of this amount was dispersed as household income in the form of salaries and other transfers. The local government employed 116 persons. Nearly a third of the government funds came from intergovernmental transfers.

Exports. The major export was agricultural goods, followed by manufactured goods and personal labor. Over $16 million worth of locally produced agricultural goods were sold to buyers outside the county in 1970.

Imports. Over 75 percent of the imports were finished consumer goods. The remainder were supplies for agriculture and raw materials for manufacturers.

Households. In 1970, the county had 5,500 households and a labor force of 7,200 people. Twenty percent of county personal income was spent for food. Major sources of household income were agriculture, manufacturing, and services.

Appanoose County, Iowa

The input-output model for Appanoose County has eight endogenous and three exogenous sectors. These sectors are discussed below, and table 5 shows the intersectoral flows.

Agriculture. In Appanoose County, agriculture is predominate in the economy. However, agriculture's relative position has been continually declining as other sectors develop and expand. In 1970, Appanoose County had 1,100 farms averaging 250 acres each. Major crops were soybeans, corn, and hay. Over half the total agricultural sales were of livestock -- primarily beef cattle and hogs -- and livestock products.

In 1970, there were 3,500 people living on farms in Appanoose County, and 1,540 individuals were reportedly employed on the farms. The farms are becoming increasingly mechanized, and there is relatively little demand for seasonal labor except for harvesting hay.

About 70 to 75 percent of the agricultural products were sold outside the county. Some livestock products were sold to a local meat wholesaler and to local retailers and households. The major local sales in 1970 were hay and corn sales to livestock producers in the county.

Agricultural input purchases are about equally divided between local merchants and external sources. Local feed and seed merchants and fertilizer and equipment dealers conducted a relatively large amount of trade within the county.

Manufacturing. In 1970, there were 18 manufacturing plants in Appanoose County. In 1970, these firms employed 1,080 people monthly, with a seasonal peak of 1,200 persons. Two new plants began operating in Centerville during 1968-70, expanding employment by 500 jobs. These two firms manufacture electronic parts and small appliances. Most manufacturing inputs were purchased outside the county, although the smaller firms purchased some of their supplies through local merchants.

Table 5.--Intersectoral transactions, Appanoose County, Iowa, 1970

Sector	Agri-culture	Manu-facture	Whole-saling	Retail-ing	Food retail-ing	Finance and real estate	Services	Local govern-ment	Exports	Household	Total
	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.
1. Agriculture	2,000	50	1,150	50	150	--	--	--	12,150	1,000	16,550
2. Manufacture	100	100	200	50	50	--	50	50	16,300	100	17,000
3. Wholesaling	800	100	800	4,800	800	50	50	200	100	500	8,200
4. Retailing	600	50	100	700	50	50	100	100	350	20,000	22,100
5. Food retailing	200	--	--	200	300	--	100	100	50	6,000	6,950
6. Finance and real estate	500	300	200	200	100	300	150	250	1,250	1,750	5,000
7. Services	350	200	250	400	200	300	200	400	200	3,500	6,000
8. Local government	750	1,200	600	1,000	200	200	250	100	1,000	1,200	6,500
9. Imports	750	6,800	3,900	12,400	4,300	200	500	1,800	--	6,750	37,400
10. Households	10,500	8,200	1,000	2,300	800	3,900	4,600	3,500	6,000	2,000	42,800
Total	16,550	17,000	8,200	22,100	6,950	5,000	6,000	6,500	37,400	42,800	168,500

-- means less than $50,000.

Wholesaling. Twenty wholesalers, with total sales of approximately $8 million, were located in Appanoose County in 1970. Two dry grocery wholesalers and one meat wholesaler accounted for 25 percent of the wholesale grocery trade, supplying primarily the smaller food retailers in the county.

Retailing. In 1970, 204 nonfood retail outlets operated in the county. Total nonfood retail sales were over $22 million. Between 20 and 30 percent of the retail merchandise was purchased from local wholesalers.

Food Retailing. Forty-three of the 52 food retailing stores in the county participated in the Food Stamp Program in 1970. Total food sales were nearly $7 million. The median amount of gross sales was $50,000, and two stores reported over $1 million in gross sales. The two largest supermarkets are owned by regional chains and operated by local personnel. Over 75 percent of the grocery supplies were purchased from wholesalers in Des Moines and Ottumwa, while the remainder were purchased locally. The food retailing sector employed approximately 170 people.

Services. In 1970, 85 establishments provided professional and other services in Appanoose County. A public utilities plant, located in Centerville, employed over 150 people. In addition, over 200 persons provided some personal or professional services.

Finance and Real Estate. The county's two banks, which are in Centerville, had total assets of over $40 million in 1970. They employed 30 people. In addition, 20 firms were engaged in finance, insurance, and/or real estate operations. The total assessed real estate valuation in the county was over $45 million in 1970. The finance and real estate sector employed 85 people and had an estimated output of $5 million.

Local Government. The local government in Appanoose County employed nearly 500 persons in 1970. Many of the employees worked on a part-time basis. The annual local budget was $6.5 million, over half of which was allocated to salaries and other household income. Over 20 percent of the budget was funded by intergovernmental transfers.

Exports. Agricultural products were the major items exported by the county. Of total agricultural output, 75 percent was exported. Another significant export was labor -- nearly 5 percent of the labor force worked outside the local area in nearby centers such as Ottumwa and Oskaloosa.

Imports. Nearly 25 percent of the county's 1970 gross product consisted of imports. These imports were primarily consumer goods and raw materials for the manufacturing sector.

Households. Agricultural employment provided the greatest share of 1970 household income in Appanoose County, although income from manufacturing employment was almost as important. About 17 percent of the 1970 county personal income was spent for food.

Chaves County, N. Mex.

The input-output model for Chaves County has eight endogenous and three exogenous sectors. The intersectoral flows are shown in table 6.

Agriculture. In 1970, agriculture in Chaves County was characterized by large, almost completely mechanized farms. The average crop farm had 500 acres and the average livestock operation had 2,000 acres. Cotton, alfalfa, and feed grains were the principal crops, but the major source of agricultural income was livestock sales. Total 1970 agricultural output was estimated to be $60 million. However, 1971 figures will show a substantial decrease because of the drought in the Southwest, which has adversely affected the whole agricultural economy of Chaves County. Livestock were sold outside the county to feed lot operators and slaughter houses. Approximately 20 percent of total agricultural output is sold within the county.

Manufacture. In 1970, there were 40 manufacturing firms in Chaves County. They employed nearly 1,500 persons. Since 1965, the number of manufacturing firms in the county has declined substantially. In 1970, however, three new firms -- employing a total of 700 persons -- located in Roswell. The city of Roswell is currently engaged in a concerted effort to attract new industry to utilize the unemployed resources resulting from the relocation of the air base and its $12 million payroll.

Wholesaling. In 1970, Chaves County had 75 wholesaling establishments with total sales of about $40 million. They were merchant wholesalers who were supplied by wholesalers in El Paso and Albuquerque. Two county-based wholesale grocers and two meat packers together comprised nearly 50 percent of the wholesale grocery trade.

Retailing. In 1970, about 450 retail establishments operated in Chaves County. This is a decline from over 525 retailers in 1963. Total nonfood retail sales were nearly $65 million. Local wholesalers provided 60 percent of the retail merchandise, with the remainder being provided by outside suppliers.

Food Retailing. There were 75 retail outlets selling food in Chaves County in 1970. Of these, 53 were reported to be participating in the Food Stamp Program. Total food sales were over $25 million. The stores' median annual sales were near $100,000, and 10 stores reported gross sales greater than $1 million. About 50 percent of the wholesale groceries were purchased from firms outside the county. This sector employed over 800 people in 1970 and contributed over $4 million to household income.

Services. It was estimated that over 500 firms were engaged in service activities in 1970. This sector employed approximately 3,000 persons, including self-employed persons, and had an annual gross output of $22 million.

Mining. In the eastern part of the county, 60 firms engaged in pumping and drilling operations for oil. The size of this industry has declined in recent years because firms are leaving the area. Total 1970 output of the mining sector is estimated at $18 million, about half of which can be considered household income, although many of the recipients were not permanent county residents.

Table 6.--Intersectoral transactions, Chaves County, New Mex., 1970

Sector	Agri-culture	Manu-facture	Mining	Whole-saling	Retail-ing	Food retail-ing	Services	Local govern-ment	Exports	Household	Total
	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.	Thou. dol.
1. Agriculture	8,000	100	--	8,000	200	600	--	100	42,400	4,000	63,400
2. Manufacture	400	200	100	1,500	100	200	100	200	14,800	1,000	18,600
3. Mining	--	1,000	200	--	--	--	--	200	14,200	--	15,600
4. Wholesaling	3,000	50	50	3,000	20,500	8,000	100	1,000	3,500	3,000	42,200
5. Retailing	4,000	50	50	400	2,500	200	400	700	2,800	50,200	61,300
6. Food retailing	1,000	--	--	300	800	1,000	200	500	1,800	19,900	25,500
7. Services	3,000	200	400	3,000	1,200	500	500	1,500	2,000	10,000	22,300
8. Local government	3,000	1,000	800	3,000	5,000	1,000	1,000	1,500	2,000	8,000	26,300
9. Imports	5,000	6,000	5,000	15,000	20,000	10,000	3,000	6,000	--	23,500	93,500
10. Households	36,000	10,000	9,000	8,000	11,000	4,000	17,000	14,600	10,000	2,000	121,600
Total	63,400	18,600	15,600	42,200	61,300	25,500	22,300	26,300	93,500	121,600	490,300

-- means less than $50,000.

Local Government. The local government had a 1970 budget of approximately $26 million. About $14 million was allocated for salaries and other household income. About 80 percent of the budget was financed locally, and the remainder was from transfers from the State and Federal Governments.

Exports. Exports were crucial in the two primary industries, agriculture and mining. Nearly 100 percent of the oil output was exported outside the county. In agriculture, about 66 percent of the output -- or $40 million in 1970 -- was sold out of the county.

Imports. Primary imports in 1970 were manufactured consumer goods, although some capital goods were imported for agriculture, manufacturing, and mining.

Households. Agriculture was the major source of household income in 1970, although only about 15 percent of the work force was employed in that sector. Income was fairly evenly divided among the remaining major sectors, with each accounting for $10 million to $15 million of household income. Food expenditures represented about 16 percent of the county personal income.

Technical Coefficients

Technical coefficients are directly computed from the intersectoral flow tables by dividing each column entry by the column's total. These coefficients show the direct effect of a $1 increase in output of any one sector on the output of other sectors (including the import sector). Because the technical coefficients are only relevant for the producing or endogenous sectors, they are not computed for the final demand or exogenous sectors.

Technical coefficients thus show the manner in which a $1 increase in output of a given sector would be distributed throughout the economy. The coefficients are assumed to be constant over time; thus, no change in technology occurs.

Interdependence Coefficients

The interdependence coefficients indicate the total change in input requirements associated with a $1 increase in a given sector's output. They include the direct as well as indirect effects of the $1 increase in output. The indirect effect is the difference between the technical coefficients -- or the direct effect -- and the interdependence coefficients, which represent the total change resulting from the initial increase in a given sector's output. The interdependence coefficients are computed by putting the technical coefficients in matrix form and subtracting this from an identity matrix. The inverse of the resulting matrix provides the interdependence coefficients.

Output Multipliers

Output multipliers are directly computed from the interdependence coefficients by adding the column entries for a given purchasing sector. They depict

the amount of output generated by a $1 increase in final demand for the goods and services of a particular sector. These multipliers can be used to project the total change in an economy due to a change in demand for the output of a particular sector or group of sectors. If the economic base under scrutiny is underdeveloped or experiencing a severe depression, these factors will be reflected in a set of relatively small multipliers indicative of large imports and little interrelationship between the sectors.

Employment Multipliers

Employment multipliers measure the change in total employment that results with a one unit change in the labor force of a given sector. The basic assumption is that for each sector, a linear relationship exists between output and employment. The relationship, of course, does not hold in any industry that has substantial economies of size in regard to the labor input. Another condition that limits the applicability of these multipliers is the existence of large segments of underutilized labor resources. The assumption of linearity more nearly holds for the labor-intensive service type industries.

Leakage Coefficients

The effect that imports have on an output multiplier is referred to as leakage. A leakage coefficient is computed under the assumption that the local economy produces all the goods and services that it requires. In other words, no goods and services are purchased from outside the local economy. For each purchasing sector, the import entry in each column of the flow table is prorated among the producing sectors.

Substantial amounts of leakage are observed in the three county models, since in each there is considerable trading with other areas. It is not necessarily desirable to eliminate leakage in a given economy because of the comparative advantage that could result from specialization. Also, actual elimination of imports would in many cases involve substantial structural changes in the intersectoral flow tables and of course would not reflect a real situation. Further, imports are an important consideration in assessing alternative policies for economic growth and development.

RESULTS OF THE ANALYSIS

Table 7 shows the technical coefficients for the food retailing sector in each of the three counties studied. Technical coefficients represent the direct effect that increased output of one sector has on the output of other sectors. As indicated in table 7, if the food retailing sector in Chaves County increases its output by $1, that sector will pay an additional 4 cents to its own factors of production and an additional 2 cents to agriculture, 1 cent to manufacturers, 31 cents to wholesalers, 1 cent to other retailers, 2 cents to service industries, and 4 cents to the local government.

To provide the food retailing sector with an additional 31 cents of goods and services, the wholesaling sector must increase its output and suppliers to

Table 7.--Technical coefficients, food retailing sector, three counties, 1970

Sector	Haywood	Appanoose	Chaves
Agriculture	.019	.021	.023
Manufacture	.000	.007	.008
Wholesaling	.056	.115	.313
Retailing	.009	.007	.008
Food retailing	.037	.043	.039
Services	.019	.029	.020
Local government	.009	.029	.039
Mining	*	*	.000
Finance	*	.014	*
Imports	.750	.619	.392
Households	.102	.115	.157

* Not applicable.

the wholesaling sector must, in turn, increase their output. These output increases are all secondary repercussions, or indirect effects, of the $1 increase in food retailing output. In addition to generating such indirect effects via the wholesaling sector, the increase in food retailing output will generate other indirect effects via other sectors in the economy.

The total effects -- both direct and indirect -- of the $1 increase in output of the food retailing sectors in the three counties are represented by the interdependence coefficients shown in tables 8-10. From these interdependence coefficients -- which show the total effect -- the indirect effect was computed. Table 11 shown the dollar value of the total, direct, and indirect effects of a $1 increase in each of the three counties' food retailing sectors.

Output multipliers. The output multipliers in table 12 are the sum of the interdependence coefficients presented in tables 8-10. As indicated in table 12, the food retailing sector in Haywood County has an output multiplier of 1.19. This indicates that a $1 increase in food retail demand in Haywood County will cause a total output increase of $1.19 in that county.

Employment multipliers. Employment multipliers were computed and are presented for the three counties in table 13. The basic assumption in computing

Table 8.--Interdependence coefficients associated with a $1 increase in food retailing output, Haywood County, Tenn., 1970

Sector	Agriculture	Manufacture	Wholesaling	Retailing	Food retailing	Services	Local Government
1. Agriculture	1.036350	.020030	.010366	.006447	.021236	.002121	.002749
2. Manufacture	.006784	1.008377	.038707	.009055	.003032	.025738	.008981
3. Wholesaling	.087374	.022449	1.101886	.164068	.068985	.059615	.104437
4. Retailing	.050736	.011341	.022037	1.016195	.013312	.027093	.080207
5. Food retailing	.003190	.002353	.011453	.025660	1.040192	.025995	.026801
6. Services	.034130	.055190	.044708	.027620	.026052	1.056513	.232028
7. Local government	.027138	.035915	.013219	.014889	.012331	.027165	1.079486
Output multiplier	1.245701	1.155654	1.250381	1.263935	1.185139	1.224260	1.534689

Table 9.--Interdependence coefficients associated with a $1 increase in food retailing output, Appanoose County, Iowa, 1970

Sector	Agriculture	Manufacture	Wholesaling	Retailing	Services	Finance	Food retailing	Local government
1. Agriculture	1.150453	.005225	.180327	.044039	.003590	.002933	.048387	.007459
2. Manufacture	.009937	1.007000	.030060	.009884	.009777	.001467	.012093	.009816
3. Wholesaling	.078005	.011308	1.128687	.257244	.019038	.017809	.141709	.043478
4. Retailing	.046311	.005170	.023954	1.039699	.019571	.013372	.013138	.018980
5. Services	.035978	.019092	.049398	.035023	1.041260	.070371	.041665	.070720
6. Finance	.043516	.023033	.041331	.022365	.030975	1.068437	.024675	.045876
7. Food retailing	.016652	.001658	.004963	.012164	.019160	.002171	1.047334	.018000
8. Local government	.065368	.075305	.099347	.072380	.049066	.048625	.047608	1.026153
Output multiplier	1.446219	1.147791	1.558066	1.492797	1.192437	1.225185	1.376608	1.240481

Table 10.--Interdependence coefficients associated with a $1 increase in food retailing output, Chaves County, New Mex., 1970

Sector	Agriculture	Manufacture	Mining	Wholesaling	Retailing	Food retailing	Services	Local government
1. Agriculture	1.167337	.008486	.002267	.240500	.091067	.108824	.004707	.019537
2. Manufacture	.012186	1.012178	.007503	.041700	.017689	.022898	.005881	.011265
3. Mining	.001211	.055603	1.013840	.002479	.001753	.001683	.000720	.008851
4. Wholesaling	.099706	.008830	.008779	1.104730	.396429	.369503	.018744	.064860
5. Retailing	.081153	.005736	.005823	.028141	1.056152	.021626	.021253	.033091
6. Food retailing	.023001	.001678	.001608	.013250	.021131	1.047064	.011120	.023031
7. Services	.063630	.016864	.030365	.022603	.035093	.032992	1.027058	.065320
8. Local government	.071094	.062590	.057756	.026971	.102571	.056633	.051892	1.069999
Output multiplier	1.519320	1.171965	1.127941	1.480373	1.721886	1.661223	1.141374	1.295954

Table 11.--Effect of a $1 increase in output of the food retailing sector, three counties, 1970

Sector	Haywood			Appanoose			Chaves		
	Total effect	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect
Agriculture	.021	.019	.002	.048	.021	.027	.109	.023	.086
Manufacture	.003	.000	.003	.012	.007	.005	.023	.008	.015
Wholesaling	.069	.056	.013	.142	.115	.027	.370	.313	.057
Retailing	.013	.009	.004	.013	.007	.006	.022	.008	.014
Food retailing	1.040	1.037	.003	1.047	1.043	.004	1.047	1.039	.008
Services	.026	.019	.007	.042	.029	.013	.033	.020	.013
Local government	.012	.009	.003	.048	.029	.019	.057	.039	.018
Mining	*	*	*	*	*	*	.002	.000	.002
Finance	*	*	*	.025	.014	.011	*	*	*

* Not applicable.

Table 12.--Output multipliers associated with a $1 increase in output of food retailing sector, three counties, 1970

Sector	Haywood	Appanoose	Chaves
Agriculture	1.25	1.45	1.52
Manufacture	1.16	1.15	1.17
Wholesaling	1.25	1.56	1.48
Retailing	1.26	1.49	1.72
Food retailing	1.19	1.38	1.66
Services	1.22	1.19	1.41
Local government	1.53	1.24	1.30
Mining	*	*	1.13
Finance	*	1.22	*

* Not applicable.

Table 13.--Employment multipliers associated with a $1 increase in output of food retailing sector, three counties, 1970

Sector	Haywood	Appanoose	Chaves
Agriculture	1.09	1.29	1.74
Manufacture	1.28	1.15	1.20
Wholesaling	2.01	2.59	1.80
Retailing	1.38	1.86	1.81
Food retailing	1.54	1.71	1.86
Services	1.09	1.09	1.07
Local government	1.44	1.18	1.25
Mining	*	*	1.27
Finance	*	1.86	*

* Not applicable.

employment multipliers is that there is a linear relationship between employment and output in every sector. Each multiplier indicates the total change in employment resulting from a one-unit change in employment in a given sector. For example, if employment in local government were to increase by 1 man-year in each of the three counties, total employment in Haywood County would increase by 1.44 man-years, in Appanoose it would increase by 1.18 man-years, and in Chaves, by 1.25 man-years.

Leakage coefficients. Output multipliers were also computed under a no-imports assumption. The difference between these multipliers and the normal

multipliers, computed earlier and listed in table 12, are the leakage effects for each sector. These leakage effects and the associated multipliers are shown in table 14. The leakage associated with each sector is the net amount of a change in total output that presumably could be achieved but is not realized because of the role of imports in the local economy. The values depicted in table 14 are inflated in direct relationship to the relative importance of imports as an input. However, the values are of interest for comparative purposes of assessing program effects under an alternative economic base.

IMPACT OF THE FOOD STAMP PROGRAM ON THE THREE COUNTIES

The previous section indicated the magnitude of increases in total output that would result from increases in final demand. The output multipliers listed in table 12 specify the degree to which an increase in final demand of one sector would affect the output of that sector and other sectors.

This section uses the input-output models previously discussed to assess the effect of the Food Stamp Program on the three local economies. The value of bonus stamp issuances represents the initial increase in final demand. The value of the bonus stamps is assumed to be a total increment to consumer spending in the local economy. In other words, the bonus stamps are presumed not to displace other consumption expenditures. It is further assumed that the entire increase in income will be initially spent within the local county economy.

The impact of the Food Stamp Program is assessed under three alternative situations. First, the value of bonus stamps issued is assumed to be entirely spent in the food retail sector. The increase in final demand for retail food is assumed to be identical to the value of bonus stamps issued.

The second alternative assumes that the increased demand results in an increase not only for food but for other retail items as well. For purposes of this assumption, it is posited that the food retailing sector and the non-food retailing sector would each have a change in final demand equal to one-half the value of bonus stamps issued.

The third alternative assumes that the net increase in real income represented by the bonus stamps is in effect equivalent to an increase in money income. Consumers will allocate the incremental income in a manner similar to their previous behavior, as reflected in the intersectoral flow tables (tables 4-6). The change in final demand will thus be prorated among the endogenous sectors in each county. The total change in final demand will be equal to the value of bonus stamps issued.

Haywood County, Tenn.

Output multipliers for Haywood County, as shown in table 12, are relatively small because of the economy's dependence on imports -- that is, a large part of the local economy's output is spent for goods and services outside the area. This is reflected by the magnitude of the leakage coefficients shown in table 14.

Table 14.--Output multipliers and leakage associated with a $1 increase in food retailing output, three counties, 1970

Sector	Haywood			Appanoose			Chaves		
	Output multipliers		Leakage	Output multipliers		Leakage	Output multipliers		Leakage
	With imports	No imports		With imports	No imports		With imports	No imports	
Agriculture	1.25	2.06	.81	1.45	1.8º	.44	1.52	2.02	.50
Manufacture	1.16	2.96	1.80	1.15	2.21	1.06	1.17	1.89	.72
Wholesaling	1.25	3.62	2.37	1.56	3.10	1.54	1.48	2.81	1.33
Retailing	1.26	4.03	2.77	1.49	3.64	2.15	1.72	3.18	1.46
Food retailing	1.19	3.70	2.51	1.38	3.39	2.01	1.66	3.24	1.58
Services	1.22	2.28	1.06	1.19	1.75	.56	1.41	1.86	.45
Local government	1.53	2.75	1.22	1.24	2.83	1.59	1.30	1.94	.64
Mining	*	*	*	*	*	*	1.13	1.83	.70
Finance	*	*	*	1.22	1.84	.62	*	*	*

* Not applicable.

The monthly issuance and redemption data for the Food Stamp Program in Haywood County were shown in table 1. The annual bonus stamp issuance was approximately $1.2 million. The administrative program inputs through the local welfare office are $35,000 in annual expenses and 7 man-years of employment.

The Food Stamp Program's impact on the 1970 output of Haywood County was approximately $1.5 million. Table 15 shows the changes in output associated with the incidence of the Food Stamp Program. The analysis indicates that for every dollar spent on the Food Stamp Program, the economy increases by a factor ranging from 1.20 to 1.26, depending on the way in which the bonus stamps are incorporated in the consumers' budget.

The employment multipliers for Haywood County (table 13) were used to estimate employment increases that would result from Food Stamp Program activities. These multipliers indicate that increased output in the food retailing and

Table 15.--Impact of the Food Stamp Program, Haywood County, Tenn., 1970

Item	Alternative I 1/	Alternative II 2/	Alternative III 3/
	----------Dollars----------		
1. Bonus stamp value	1,207,200	1,207,200	1,207,200
2. Change in food retailing demand	1,207,200	603,600	228,161
3. Change in output 4/	1,436,568	718,284	271,512
4. Change in demand in other sectors		603,600	979,039
5. Change in output 4/		760,536	1,237,813
6. Local government expense	35,000	35,000	35,000
7. Change in output 4/	53,550	53,550	53,550
8. Total change in output 5/	1,490,118	1,532,370	1,562,875
Multiplier--total	1.20	1.23	1.26

1/ Bonus stamp value is entirely spent in food retailing sector.
2/ Bonus stamp value is spent equally between food retailing sector and all other sectors.
3/ Bonus stamp value is spent in the same proportions shown in table 4.
4/ Indicated change in demand multiplied by appropriate sector multiplier.
5/ Sum of items 3, 5, and 7.

other sectors would result in approximately 60 additional man-years of total employment for Haywood County.

Although the output multipliers for Haywood County are small, the true impact of the Food Stamp Program can be demonstrated by relating the dimensions of the program to the economy. The value of food stamps issued in 1970 was equal to nearly 6 percent of total household income. Food stamp sales represented a third of all food sales in the county and nearly 10 percent of total retail sales. In terms of its magnitude relative to the rest of the economy, the Food Stamp Program was an integral and important factor in the 1970 economy of Haywood County.

Appanoose County, Iowa

Table 16 shows the impact of the Food Stamp Program on the economy of Appanoose County. As indicated in table 14, there is substantial leakage in

Table 16.--Impact of the Food Stamp Program, Appanoose County, Iowa, 1970

Item	Alternative I 1/	Alternative II 2/	Alternative III 3/
	----------Dollars----------		
1. Bonus stamp value	183,983	183,983	183,983
2. Change in food retailing demand	183,983	91,992	32,381
3. Change in output 4/	253,896	126,948	44,686
4. Change in demand in other sectors		91,991	151,602
5. Change in output 4/		137,066	215,842
6. Local government expense	15,000	15,000	15,000
7. Change in output 4/	18,600	18,600	18,600
8. Total change in output 5/	272,496	282,614	279,128
Multiplier--total	1.37	1.42	1.40

1/ Bonus stamp value is entirely spent in food retailing sector.
2/ Bonus stamp value is spent equally between food retailing sector and all other sectors.
3/ Bonus stamp value is spent in the same proportions shown in table 5.
4/ Indicated change in demand multiplied by appropriate sector multiplier.
5/ Sum of items 3, 5, and 7.

this economy, but not of the magnitude observed in Haywood County. The economy of Appanoose County has a larger gross product and is more diversified. The analysis indicates that the total impact of the Food Stamp Program on the annual output of Appanoose County was over a quarter million dollars. An output multiplier of approximately 1.4 is indicated for each dollar expended by the Food Stamp Program.

Total food stamp sales represented nearly 5 percent of total food sales and approximately 1 percent of household income. The employment multipliers applied to the data indicate an increase of 11 man-years in total employment resulting from the activity of the Food Stamp Program.

Chaves County, N. Mex.

As indicated earlier, Chaves County has the largest, most diversified, and most developed economy of the three counties. Reference to table 14, however, indicates that the economy depends to a significant degree on imports, as evidenced by the several sectors with large leakage coefficients.

The Food Stamp Program in Chaves County in 1970 issued $870,530 in bonus stamps (table 17). This value represented nearly two-thirds of the total value of stamps issued. The total value of food stamps represented approximately 5 percent of total retail food sales and 1.2 percent of total household income.

Table 17 portrays the impact of the Food Stamp Program under the three alternative assumptions. The total change in output resulting from the Food Stamp Program was approximately $1.5 million and a multiplier ranging from 1.65 to 1.68, which represents the largest multiplier effect among the three counties.

The employment multipliers for Chaves County indicate that, given the level and nature of its activity in 1970, the Food Stamp Program generated 59 additional man-years of employment.

Table 17.--Impact of the Food Stamp Program, Chaves County, New Mex., 1970

Item	Alternative I 1/	Alternative II 2/	Alternative III 3/
	----------Dollars----------		
1. Bonus stamp value	870,530	870,530	870,530
2. Change in food retailing demand	870,530	435,265	180,200
3. Change in output 4/	1,445,079	722,539	299,132
4. Change in demand in other sectors		435,265	690,330
5. Change in output 4/		748,655	1,110,378
6. Local government expense	30,000	30,000	30,000
7. Change in output 4/	39,000	39,000	39,000
8. Total change in output 5/	1,484,079	1,510,194	1,448,510
Multiplier--total	1.65	1.68	1.66

1/ Bonus stamp value is entirely spent in food retailing sector.
2/ Bonus stamp value is spent equally between food retailing sector and all other sectors.
3/ Bonus stamp value is spent in the same proportions shown in table 6.
4/ Indicated change in demand multiplied by appropriate sector multiplier.
5/ Sum of items 3, 5, and 7.

CONCLUSIONS

The general objective of this study was to examine the impact of the Food Stamp Program on the economies of three counties. By use of input-output techniques, the interdependence of basic economic sectors in the three counties were examined.

Results of this study indicate that there are significant benefits to the local economies as a result of the operation and administration of the Food Stamp Program. The multiplier on the initial outlays of Food Stamp Program funds enhances substantially arguments for expansion of the program. Such analyses could be used as added inducements on local communities to initiate a program where none presently exists.

It should be pointed out that the Food Stamp Program is not designed to foster economic activity or growth. Hence, the relative economic impact of public funds invested in the Food Stamp Program is only of secondary importance to the primary goal of assisting low-income families to upgrade the quality of their diets.

This study indicates that in the three counties studied, Food Stamp Program expenditures would have a multiplier effect of 1.20 to 1.68 on the local economy. This means that for every dollar spent for the Food Stamp Program, the total output of the local economy would increase by $1.20 to $1.68. Translated into employment data, these figures represent a possible increase of 60 new jobs in Haywood County, 11 in Appanoose County, and 59 in Chaves County.

There was substantial leakage in each of the three study areas because in each county, much of the local income was used to purchase goods and services outside the area.

APPENDIX -- NOTES ON DATA SOURCES AND COLLECTION

The input-output tables were derived from several data sources. Basic data relative to the overall economic values in each county were initially derived from secondary sources available at the national level. These sources included:

1) 1964 Census of Agriculture (U.S. Dept. of Commerce, Bureau of the Census).

2) 1961 Census of Business Retail Trade, Area Statistics and 1961 Census of Business Wholesale Trade, Area Statistics (U.S. Dept. of Commerce, Bureau of the Census).

3) 1961 United States Census of Manufacturers, Area Statistics (U.S. Dept. of Commerce, Bureau of the Census).

4) County Business Patterns, by States, 1967 (U.S. Dept. of Commerce, Bureau of the Census).

5) City and County Data Book, 1967 (U.S. Dept. of Commerce, Bureau of the Census).

6) Community Profile, 1967 (U.S. Office of Economic Opportunity).

7) SRDS Consumer Market Data, Oct. 1970 (Standard Rate and Data Service).

Data from these sources were adjusted and augmented with data from local sources. These included:

1) Employment records of the local Employment Security offices.

2) Agricultural records of the county extension agent and other local sources.

3) Business and manufacturing records of the local Chambers of Commerce and similar civic or commercial groups.

4) Annual financial reports of the county treasurers.

5) Retail sales tax records.

6) Sociological and demographic records of the local county welfare offices.

7) Food Stamp Program data from the regional and local offices of the Food Stamp Program.

To estimate specific values in the intersectoral tables, extensive interviews were made in each locality to obtain necessary data not otherwise available. Where data directly applicable to the area were not available, estimates were based on input coefficients derived in previous studies of similar areas.

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